

**THE DISEASES, REGENERATION, & CULTURE  
OF THE POTATO: CONTAINING AN  
EXAMINATION OF THE ROYAL  
AGRICULTURAL SOCIETY'S PRIZE ESSAYS  
ON THE "BLIGHT;" A REPLY TO DR. LINDLEY,  
ON THE WEARING OUT OF PLANTS**

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**JOHN TOWNLEY**

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THE POTATO:

CONTAINING AN

EXAMINATION OF THE ROYAL AGRICULTURAL SOCIETY'S  
PRIZE ESSAYS ON THE "BLIGHT;"

A REPLY TO DR. LINDLEY, ON THE WEARING OUT  
OF PLANTS;

AND SHOWING WHAT ARE THE PREDISPOSING AND EXCITING CAUSES  
OF THE POTATO DISEASE,—WHAT THE BEST MEANS OF MITIGATING ITS  
EFFECTS, AND OF ULTIMATELY RESTORING THE PLANT TO HEALTH.

By JOHN TOWNLEY.

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"Nature is not to be conquered except by obeying her."—BACON.

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LONDON:  
BENJAMIN LEFARD GREEN, 62, PATERNOSTER ROW.

1847.

## PREFACE.

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IT may be necessary in the outset to state, in as few words as possible, why I have been induced to examine a question which has baffled the skill of numerous individuals, distinguished for their scientific attainments.

About ten years ago I wrote several letters on horticultural subjects, which were printed in a provincial paper—the Preston Pilot. One of these letters was on the dry rot disease of the potato, at that time prevalent to a considerable extent. I forwarded a copy of the newspaper containing this letter, to the late T. A. Knight, Esq., then President of the Horticultural Society, thinking it would afford him some pleasure to learn, that an attempt, however humble, was being made to induce better modes of cultivation, based on a knowledge of natural laws. To my gratification Mr. Knight wrote to the Editor of the Pilot, in confirmation of the accuracy of my views respecting the cause of dry rot, and the remedy to be applied, requesting, at the same time, that I would furnish him with my address. This circumstance led to a correspondence between us, which ended only with his lamented death; and as a letter on the potato was the means of introducing me to a man who, by his interpretation of the laws of vegetable life, had conferred such inestimable benefits on mankind, I was, perhaps, thus led to take more than ordinary interest in anything relating to that plant.

When, therefore, Dr. Salter's letter in the Gar-

deners' Chronicle announced the appearance of the blight, my attention was immediately excited, and I carefully noted the statements of subsequent observers. I had many reasons to be dissatisfied with the unfortunate explanation of the disease broached by Dr. Lindley, but was unable to find a better, when a note appeared from Mr. Berkeley, stating that he had observed a parasitic fungus preceded the destruction of the plant. This suggested to me the predisposing cause of the disease, and I saw at once how this predisposition must have been induced. It was now clear to me why many young varieties were attacked by dry rot and blight equally with the oldest. I then became convinced that the disease was of no temporary character, and by what means only it could be eradicated. In short, a review of the observations which had been made up to that period, discovered to me that the hitherto discordant facts now formed one harmonious whole, and from that hour I was persuaded that the question was settled.

I continued for a few weeks noting numerous observations, as they poured in from various parts of the country, and all further consideration assured me that my view of the nature of the disease was well-founded. And knowing the danger which was to be apprehended from extensive and successive failures of the potato crop, I felt it to be a solemn duty to warn the country, that this evil was not of any transitory character, and to state the grounds I had for arriving at such conclusion. In accordance, therefore, with this conviction, I sent a letter to the Editor of the Times, on the 8th of October, 1845. Three or four weeks afterwards I wrote another letter, a copy of which I forwarded to the Government. I also forwarded a copy to the Editor of the Morning Herald. My best thanks are due

to that gentleman for the promptitude with which he inserted the letter.

The Commissioners' Report on the cause of the disease, appeared in the same Number of the Herald as that which contained my letter. The conclusions arrived at by the Commissioners and myself respectively, were at variance, and as Dr. Lindley endeavoured, in the Gardeners' Chronicle, to support the Commissioners' views, and to disparage those I entertained, by statements which seemed to me to be opposed to well-established facts, I forwarded two other letters to the Herald, seeing no other means of arriving at a more truthful view of the whole case, than by bringing forward additional facts, and courting a more searching inquiry. Dr. Lindley did not reply in the Herald, but he published two articles in the Gardeners' Chronicle, the object of which was to show that my explanation of the cause of the malady was not well-founded.

I subsequently wrote three other papers; one being on the best means of renovating the health of the plant—one, an examination of Dr. Lindley's two articles—and one, an examination of lectures on the blight, delivered before the English Agricultural Society. A copy of this last paper, (showing how utterly impossible it was that the disease should be owing to the supposed unfavourable season of 1845), I forwarded to the Government early in February 1846. Copies of these papers were forwarded to the Royal Agricultural Society of England, to the Highland and Agricultural Society of Scotland, and to the Royal Irish Agricultural Improvement Society.

In the autumn of 1846, I wrote another paper, exposing the fallacies of sundry hypotheses which had been recently advanced, and showing how the



experience of that year, and observations made in other countries, confirmed the accuracy of my views. This paper being finished during the recess of the Royal Agricultural Society, was forwarded direct to Mr. Pusey, the Chairman of the Journal Committee. It was not sent with a view to compete for the prizes offered by the Society, (as I was precluded by two conditions) "but in the hope that it might prove useful to them in their endeavours to discover the cause of the potato disease."

Every essential conclusion that I arrived at in 1845, respecting the blight, has hitherto been confirmed; no other explanation has stood the test of time, or will now so satisfactorily explain all the facts; and as the English Agricultural Society has awarded its prizes to essays which ascribe the disease to the wet and cloudy nature of the season of 1845, I do feel it incumbent on me to publish my views in some permanent form, and so leave time, and time's sure effects on the public mind, to determine on whose side is truth.

J. T.

*London, May 1847.*

## INTRODUCTION.

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THAT it is desirable to ascertain, if possible, the cause of the disease of the potato, and whether by any means we can subdue an evil, the fearful effects of which we already know, whose future influence is a source of well-grounded anxiety, and the consequences of which no man can foresee, would appear to be a self-evident proposition.

The last year's loss in the potato crop of Britain only is estimated at £12,000,000. Upwards of four millions of the population of Ireland have subsisted chiefly, we may say entirely, on the potato, and apart from this disease in the crop, great distress, arising from a scarcity of food in early summer, has been something like an hereditary evil in that country. The potato has also been the principal support of the poorer classes in the Highlands and Islands of Scotland, and it has hitherto been considered an almost indispensable article in the diet of all classes in England.

The agricultural produce of the United Kingdom, on an average of years is not equal to the wants of its inhabitants, coupled with which we have a peculiar danger attending extensive failure or loss of the potato, arising from the well-known fact that this esculent affords a greater amount of human food from a given space of land, than any other crop whatever. The produce of the Swedish turnip may, in suitable soils and favourable seasons, equal or exceed that of the potato, but it is a crop subject to many accidents; partial failures occur almost every year; extensive failures are not unfrequent; and, however useful as food for cattle, the turnip would be, and has been found on trial, only an indifferent substitute for the potato as food for man. The same may be said of carrots and parsnips. Notwithstanding the numerous receipts in the columns of newspapers for cooking these roots, with a view to make them palatable in daily use, bread or other farinaceous food is now generally used in preference to them.

Peas and beans were in former years extensively used in this country. But of all crops these are the most precarious, and can only be grown on certain soils with advantage. They contain, it is true, more nutriment; more of the elements which enter into the composition of the animal frame, as compared with matter chiefly required for respiration, than the potato, yet they are not generally palatable, and their produce, on an average of years, will not

afford sustenance to half the number of people as would the same extent of land under potatoes. This is a sufficient answer to a question which has been asked, viz., why should not these crops again supersede the necessity for the potato.

There is obviously no better prospect of relief by sowing a greater breadth of our arable land with wheat or other grain, which has also been suggested. Much of the improvement in British agriculture of late years, is, as is well-known, the result of a more judicious rotation of crops, by which corn is not grown two or more years in succession as formerly. But even supposing this more judicious rotation could be laid aside without impoverishing the land, and thus diminishing the succeeding crops, still we should not be able to supply the void caused by the loss of the potato; because one acre of potatoes will, on the very lowest calculation, maintain a given number of people as long as two acres of wheat. As we have no root, then, which can be considered to be an equivalent for the potato, and as no pulse or grain crop, can yield individually anything approaching the same amount of food per acre as the potato, neither can they do so collectively, for each requires as long a time as does the potato to bring it to maturity. If, then, the culture of the potato is to be abandoned, or if it be extensively cultivated, and the present disease should continue, it must be evident that, unless an extraordinary effort is made to increase our supplies, by increasing the fertility of the land in cultivation (of which there is little prospect), the agricultural produce must fall far short of the wants of the people. And as a consequence of this, we must continue to import a great amount of food from other countries; the prices of provisions will necessarily remain high; and the distress and sufferings of the poor will, to all appearance, be perpetuated.

As the failure of the potato has led to these evils, its speedy renovation would, of course, be their most effectual remedy, and therefore an enquiry into the cause of the disease with a view to its prevention is all important.

Many, however, I am aware, will not willingly subscribe to this. We shall be told that the potato is at best but a precarious crop. The reply to this is ready, and tends in no small degree to enhance the value of the potato, when contrasted with its compeers in the vegetable world. They who contend that the culture of the potato should be abandoned on the ground that it is a precarious crop, can know little of the previous history of the plant, for however uncertain it may have become of late years, it was formerly considered to be the most certain of all crops, and hailed as the palladium against famine.

Even the Royal Society, so long back as 1663, endeavoured to encourage a more extensive cultivation of the potato, with a special